

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Restriction Requirement

Applicant affirms the election of Group I, consisting of claims 1-9, 11-30, and 40-47, for continued examination without traverse. Further, Applicant affirms that claims 31-39 have been withdrawn.

Disposition of Claims

Claims 1-9, 11-30, and 40-47 are pending in the application. Claims 1, 16, 18, 40, and 41 are independent. The remaining claims depend, directly or indirectly, from claims 1, 16, 18, 40, and 41.

Objections

Claim 45 is objected to because the acronym "CBN" is not defined. Claim 45 has been amended in this reply in view of this rejection.

Claim 46 is objected to because there is insufficient antecedent basis for the limitation of "the diamond concentration and diamond particle size." Claim 46 has been amended in this reply in view of this rejection. No new matter has been added. Accordingly, withdrawal of this objection is respectfully requested.

Rejections under 35 U.S.C. §102

Claims 1, 16, 18, and 40 stand rejected under 35 U.S.C. §102 as anticipated by U.S. Patent No. 4,718,505 ("Fuller"). This rejection is respectfully traversed.

Claims 1, 16, 18, and 40 recite drill bit inserts, drill bits, and a method of drilling all comprising inserts having a diamond-impregnated insert body and a thermally stable shearing portion disposed on said diamond-impregnated insert body.

Fuller discloses a drill bit where each cutting element is bonded to a stud which is received in a socket in the bit body. Spaced rearwardly of each of these cutting elements is a separate abrasion element which comprises a stud that is received in a socket in the bit body and is impregnated with diamond particles.

Fuller neither shows or suggests a drill bit insert with a diamond impregnated body and a thermally stable shearing portion disposed thereon. Fuller discloses a cutting element which is comprised of matrix material such as cemented tungsten carbide and a layer of superhard material such as polycrystalline diamond. Also, a separate diamond impregnated abrasion element is located behind the cutting element. Fuller further discloses in the specification that while the abrasion element is preferably spaced away from the cutting element to minimize heat transfer from the cutting element to the abrasion element, the abrasion element may be rearwardly adjacent to the cutting element (Fuller Figures 6 and 7). In contrast, the cutting insert of the claimed invention comprises a thermally stable shearing portion directly attached to the diamond impregnated body (Claimed Invention Figures 6A and 6B). Advantageously, the embodiment of the claimed invention allows the body of the insert to introduce impregnated diamonds to the formation as the insert progressively wears during drilling. This increases drill efficiency and limits the progression of wear.

Also, the use of a thermally stable shearing portion allows for enhanced shearing of the formation. Thermally stable shearing portions result in reduced deterioration of the diamond table that can be caused by the exposure to high temperatures while drilling. Fuller is

silent as to using thermally stable shearing portions. In view of the above, Fuller fails to show or suggest the present invention as recited in claims 1, 16, 18, and 40. Thus, claims 1, 16, 18, and 40 are patentable over Fuller. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 41 stands rejected under 35 U.S.C. §102 as anticipated by U.S. Patent Nos. 5,351,770 ("Cawthorne") and 5,217,081 ("Waldenstrom"). This rejection is respectfully traversed.

Claim 41 recites a composite cutting element for a drill bit comprising of an abrasive insert body having a mixture of ultra-hard material and a less abrasion resistant matrix material cemented together, and a thermally stable shearing element on the insert body.

Cawthorne discloses a rock bit comprising cutters fabricated from a composite of tungsten carbide material impregnated with diamond particles and positioned as to maintain a constant diameter of the borehole. Cawthorne neither shows or suggests using a thermally stable shearing element along with an abrasive insert body to create a composite cutting element. Cawthorne discloses using a diamond disk as the cutting element, but remains silent as to using a cutting element that is thermally stable. Applicant is unaware of any disclosure by Cawthorne that recites all the elements of claim 41 and, therefore, the claim is not anticipated by Cawthorne.

Waldenstrom discloses a rock cutter insert comprising a body of cemented carbide containing diamond and/or cubic boron nitride bonded at high pressure and high temperature. Waldenstrom neither shows or suggests using a thermally stable shearing element along with an abrasive insert body to create a composite cutting element. Waldenstrom

discloses that the diamond and/or CBN may be embedded within the carbide body or may be in the form of a layer atop the body, but Waldenstrom is silent as to using a thermally stable cutting material. Applicant is unaware of any disclosure by Waldenstrom that recites all the elements of claim 41 and, therefore, the claim is not anticipated by Waldenstrom.

In view of the above, both Cawthorne and Waldenstrom fail to show or suggest the present invention as recited in claim 40. Thus, claim 40 is patentable over Cawthorne and Waldenstrom. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 5-6, 11-13, 25-26, and 28-30 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of U.S. Patent No. 5, 279,374 ("Siever"). This rejection is respectfully traversed.

As discussed above with respect to claims 1, 16, and 18, from which claims 5-6, 11-13, 25-26, and 28-30 depend, Fuller neither shows nor suggests a diamond impregnated insert body and a thermally stable shearing portion disposed thereon as recited in claims 1, 16, and 18. Siever, which the Examiner only asserts as teaching a tungsten carbide coating, does not provide that which Fuller lacks, with respect to independent claims 1, 16, and 18.

In view of the above, Fuller and Siever, whether considered separately or in combination, fail to show or suggest the present invention as recited in claims 1, 16, and 18. Thus, claims 1, 16, and 18 are patentable over Fuller and Siever. Claims 5-6, 11-13, 25-26, and 28-30, which depend from claims 1, 16, and 18 respectively, are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 20-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of U.S. Patent No. 6,193,000 ("Caraway"). This rejection is respectfully traversed.

As discussed above with respect to claim 18, from which claims 20-21 depend, Fuller neither shows or suggests a diamond impregnated insert body and a thermally stable shearing portion disposed thereon as recited in claim 18. Caraway, which the Examiner only asserts as teaching a bit body made of diamond impregnated tungsten carbide matrix, does not provide that which Fuller lacks, with respect to independent claims 18.

In view of the above, Fuller and Caraway, whether considered separately or in combination, fail to show or suggest the present invention as recited in claim 18. Thus, claim 18 is patentable over Fuller and Caraway. Claims 20-21, which depend from claim 18 are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 47 stands rejected under 35 U.S.C. § 103 as being unpatentable over Cawthorne in view of U.S. Patent No. 5,045,092 ("Keshavan"). This rejection is respectfully traversed.

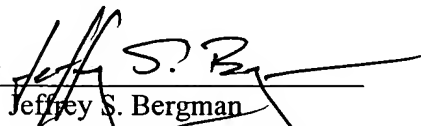
As discussed above with respect to claim 41, from which claim 47 depends, Cawthorne neither shows or suggests a diamond impregnated insert body and a thermally stable shearing portion disposed thereon as recited in claim 41. Keshavan, which the Examiner only asserts as teaching that the diamond concentration within the cutter can be varied, does not provide that which Cawthorne lacks, with respect to independent claim 41.

In view of the above, Cawthorne and Keshavan, whether considered separately or in combination, fail to show or suggest the present invention as recited in claim 41. Thus, claim 41 is patentable over Cawthorne and Keshavan. Claim 47, which depends from claim 41 is allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516/147002).

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Respectfully submitted,

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